

# Adaptable and Reconfigurable Modular Systems (GSFC) - Plug and Play, Distributed Avionics, Phase I

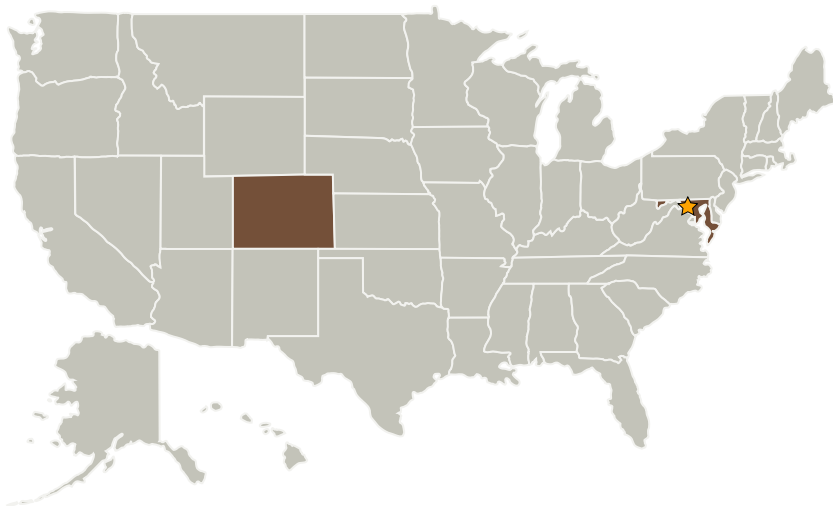
Completed Technology Project (2006 - 2006)



## Project Introduction

In order to execute the President's Vision for Space Exploration, NASA must find ways to reduce spacecraft cost, complexity, and integration and test time while increasing mission. Modular, reconfigurable satellite technologies are being developed at Goddard Space Flight Center for increasingly ambitious missions involving humans and robots. Development is on-going at both GSFC and the Air Force Research Lab investigating high speed spacecraft data network architectures based on commercial Ethernet protocols. The advantages of an Ethernet network protocol include supporting FPGA implementation, broadcast capability, and most importantly extensive support by commercial standards and infrastructure. MicroSat Systems Inc. is proposing development of an Ethernet version of its modular, plug and play Intelligent Power/Data Ring avionics architecture. MSI's revolutionary architecture provides a modular, plug and play network of standardized attachment nodes distributing power and data management functions. Since the IPDR network implements a common set of standardized nodes for every interface versus customized cards, the system cost and integration time is reduced to 40-60% of comparable centralized systems. During the Phase 1 MSI proposes to develop a concept and analyze the benefits of Ethernet protocol in the IPDR architecture and quantify those benefits in a breadboard test environment.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Goddard Space Flight Center (GSFC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
MicroSat Systems, Inc.	Supporting Organization	Industry	Littleton, Colorado

Primary U.S. Work Locations	
Colorado	Maryland

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

## Technology Areas

**Primary:**

- TX02 Flight Computing and Avionics
  - └ TX02.2 Avionics Systems and Subsystems
    - └ TX02.2.7 Data Reduction Hardware Systems